

**Amendments to the Claims:**

The claim amendments below are presented from Applicant's best understanding of how the claims are amended per the Examiner's amendment described in the Notice of Allowance dated March 3, 2011. This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Canceled)
2. (Previously Presented) The method of claim 31, further comprising the computer generating one or more data sets associated with one or more parameters of a plurality of appliances having geometries selected to progressively reposition the teeth, wherein the appliances comprise polymeric shells having cavities and wherein the cavities of successive shells have different geometries shaped to receive and resiliently reposition teeth from one arrangement to a successive arrangement.
3. (Previously Presented) The method of claim 2, wherein the plurality of appliances includes a sequence of configurations of braces, the braces including brackets and archwires.
4. (Previously Presented) The method of claim 2, wherein the plurality of appliances includes a sequence of polymeric shells manufactured by fitting polymeric sheets over positive models corresponding to the teeth of the new patient.
5. (Previously Presented) The method of claim 2, wherein the plurality of appliances includes a sequence of polymeric shells manufactured from digital

models

6. (Previously Presented) The method of claim 37, wherein the similarity between the value of at least one of the number of parameters for the particular cluster and the corresponding value of the at least one parameter for the new patient is related to one or more clinical constraints.

7. (Previously Presented) The method of claim 6, wherein the one or more clinical constraints includes one or more of a maximum rate of displacement of a tooth, a maximum force on a tooth, a desired end position of a tooth, or one or more combinations thereof.

8. (Original) The method of claim 7, wherein the maximum force is a linear force or a torsional force.

9. (Previously Presented) The method of claim 7, wherein the maximum rate of displacement is a linear or an angular rate of displacement.

10-12. (Canceled)

13. (Previously Presented) The method of claim 2, wherein one of the plurality of appliances is a positioner for finishing and maintaining teeth positions.

14. (Previously Presented) The method of claim 2, further comprising:  
the computer comparing an actual effect of the plurality of appliances with an intended effect of the plurality of appliances; and  
the computer identifying one of the plurality of appliances as an unsatisfactory appliance if the actual effect of one of the plurality of the appliances is more than a threshold different from the intended effect of the plurality of

appliances.

15. (Previously Presented) The method of claim 31, further comprising the computer capturing at least an initial tooth position, a target tooth position; and one or more intermediate tooth positions.

16. (Previously Presented) The method of claim 31, further comprising the computer analyzing one of a plurality of intermediate tooth positions with a target position.

17. (Previously Presented) The method of claim 31, further comprising the computer capturing one or more characteristics data tags associated with a patient case to label captured data.

18. (Previously Presented) The method of claim 17, further comprising the computer aggregating data of a set of treatments based on the data tags and rating at least one of a plurality of the set of treatments based on the aggregated data.

19. (Previously Presented) The method of claim 18, further comprising the computer comparing performance of a plurality of sets of treatments.

20. (Previously Presented) The method of claim 31, further comprising the computer applying a predetermined treatment model to calculate risk of treatment complication.

21. (Canceled)

22. (Previously Presented) The method of claim 20, further comprising the computer identifying a treatment case for special treatment parameters including

clinical constraint.

23. (Previously Presented) The method of claim 20, further comprising the computer clusterizing a plurality of clinical practitioners based on one or more practice habits.

24. (Original) The method of claim 23, wherein treatment parameters are adapted to preferences specific to each cluster.

25. (Previously Presented) The method of claim 31, further comprising the computer applying a probabilistic model to detect one or more discrepancies between a target and an actual tooth position at one or more stages in the treatment.

26. (Canceled)

27. (Previously Presented) The method of claim 31, wherein clustering is iteratively performed, and each iteration of clustering includes updating the detected one or more patterns.

28. (Previously Presented) The method of claim 36, wherein clustering includes iteratively detecting the one or more patterns and updating the modeled risk based on each iteratively detected one or more patterns.

29. (Previously Presented) An apparatus, comprising:  
one or more processors;  
a database including stored information related to a plurality of patient treatment histories, each including:  
an initial data set representing teeth of each dental patient prior to treatment;

an intended dental treatment outcome data set for each dental patient;  
and

an actual dental treatment outcome data set for each dental patient;  
and

a memory for storing instructions which, when executed by the one or more processors, causes the one or more processors to:

access information from the database;

perform a clustering operation on the accessed information from the database to cluster the information into clusters based on at least one of a number of parameters including initial physical dental condition, initial diagnoses, dental treatment parameters, intended dental treatment outcomes, actual dental treatment outcomes, appliance design, manufacturing protocol, clinician, clinician geography, clinician training, size and nature of clinician's practice, and patient demographics;

model discrepancies between the intended dental treatment outcome data sets and the actual dental treatment outcome data sets within a particular cluster;

correlate the modeled discrepancies to one or more of treatment approach, appliance design, and manufacturing protocol within the particular cluster; and

provide the correlation as feedback for optimizing the one or more of initial physical dental condition, initial diagnoses, treatment approach, intended dental treatment outcomes, actual dental treatment outcomes, appliance design, manufacturing protocol, clinician, clinician geography, clinician training, size and nature of clinician's practice, and patient demographics.

30. (Previously Presented) The apparatus of claim 29 including a display device operatively coupled to the one or more processors, wherein the memory for storing instructions, which, when executed by the one or more processors, causes the one or more processors to display the accessed information on the display device.

31. (Currently Amended) A computer implemented method, comprising:

storing in a database data related to each of a plurality of dental patient treatment histories, each including:

an initial data set representing teeth of each dental patient prior to treatment;

an intended dental treatment outcome data set for each dental patient; and

an actual dental treatment outcome data set for each dental patient;

a computer clustering the data into clusters based on at least one of a number of parameters including initial physical dental condition, initial diagnoses, dental treatment parameters, intended dental treatment outcomes, actual dental treatment outcomes, appliance design, manufacturing protocol, clinician, clinician geography, clinician training, size and nature of clinician's practice, and patient demographics;

the computer modeling discrepancies between the intended dental treatment outcome data sets and the actual dental treatment outcome data sets within a particular cluster;

the computer correlating the modeled discrepancies to one or more of treatment approach, appliance design, and manufacturing protocol within the particular cluster; and

the computer providing the correlation as feedback for optimizing the one or more of initial physical dental condition, initial diagnoses, dental treatment parameters, intended dental treatment outcomes, actual dental treatment outcomes, appliance design, manufacturing protocol, clinician, clinician geography, clinician training, size and nature of clinician's practice, and patient demographics.

32. (Canceled)

33. (Previously Presented) The method of claim 31, where the method includes the computer setting a flag for solicitation of treatment differences by a particular clinician who achieved better treatment outcomes relative to other correlated clinicians within the particular cluster.

34. (Previously Presented) The method of claim 31, where the method includes the computer detecting differences in treatment preferences of one or more clinicians by statistical observation of associated treatment histories.

35. (Previously Presented) The method of claim 34, where clustering data includes the computer clustering based on one or more parameters relating to the one or more clinicians including geographical location, training variables, size of practice, and nature of practice.

36. (Previously Presented) The method of claim 31, where the method includes the computer modeling risk for undesirable dental treatment outcomes within the particular cluster based at least in part on the modeled discrepancies within each cluster.

37. (Previously Presented) The method of claim 36, where the method includes the computer:

assigning a new patient to the particular cluster prior to treatment based at least in part on a similarity between a value of at least one of the number of parameters for the particular cluster and a corresponding value of the at least one parameter for the new patient; and

predicting a dental treatment outcome for the new patient based at least in part on the modeled risk and modeled discrepancies within each cluster.

38. (Previously Presented) The method of claim 37, where the method includes the computer providing a dental treatment plan for the new patient to reach a particular intended dental treatment outcome based at least in part on the particular cluster and the modeled discrepancies for the particular cluster.

39. (Previously Presented) The method of claim 38, where the computer providing the dental treatment plan includes one or more of providing a dental appliance design, providing a dental appliance manufacturing protocol, and providing a treatment approach for dental appliance usage.

40. (Previously Presented) The method of claim 31, wherein the method includes providing the feedback to a clinician for use with respect to a new patient.